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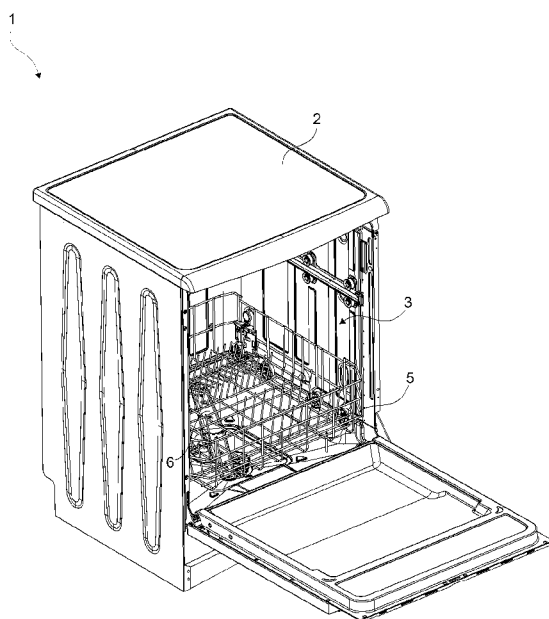
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(54) Title: A DISHWASHER

Figure 1



(57) Abstract: The present invention relates to a dishwasher (1) comprising a body (2); a washing tub (3) which is arranged in the body (2) and wherein the washing process is realized; a main supply line (4) for delivering water into the washing tub (3); at least one rack (5) which is arranged in the washing tub (3) and which has a plurality of wires (T) whereon the dishes to be washed are placed; at least one spraying member (6) which enables the water received from the main supply line (4) to be delivered onto the items on the rack (5) so as to carry out regional washing; a delivery line (7) with one end connected to the main supply line (4), which delivers water to the spraying member (6); and a washing apparatus (8) with one end connected to the delivery line (7), which is placed onto the rack (5) and which enables the water received from the delivery line (7) to be delivered into a hollow item on the rack (5) by means of one or more than one hole (9) so as to wash said item.



Description**A DISHWASHER**

- [0001] The present invention relates to a dishwasher comprising a washing apparatus which provides the efficient washing of items in different shapes and sizes placed onto the rack.
- [0002] In dishwashers, the washing process is realized by spraying the water received from the main supply line onto the items placed on the rack by means of the spray arms. The spraying members provided on the spray arm enable the water to be sprayed onto the items at a certain pressure. Since the flow rate and pressure of the sprayed water are important in terms of cleaning the items, additional washing regions are formed in order to remove heavy dirt. The items placed onto the rack are cleaned with water pressure and detergent. Therefore, the placement of the items on the rack is important for an efficient washing process. The water and the detergent cannot sufficiently contact especially tall kitchen items such as glasses with a narrow mouth, which as a result cannot be cleaned. In such cases, the user is required to wash the unclean items again, which in turn decreases user satisfaction as the washing performance is insufficient. Moreover, the dirtiness rates of the items placed onto the rack may be different, and some items may require relatively heavy washing. Depending on the placement of items with heavy dirt onto the rack and the selection of the suitable washing program, the amount of water and detergent consumed increases.
- [0003] In the state of the art United States of America Patent Application Document No. US2012291827, a dishwasher is disclosed, comprising a washing apparatus which is suitable to be placed onto the upper rack and which receives from the same line as the upper spray arm to deliver water into items such as glass, bottle, etc. by means of a sprayer.
- [0004] The aim of the present invention is the realization of a dishwasher with improved washing effectiveness.
- [0005] The dishwasher realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a body; a washing tub disposed in the body and wherein the washing

process is realized; and a main supply line which provides the delivery of water into the washing tub. At least one rack having a plurality of wires is provided in the washing tub. The dishwasher comprises at least one spraying member which enables the water received from the main supply line to be delivered onto the items on the rack so as to be washed. On the rack a delivery line is provided, with one end connected to the main supply line, which enables the water received from the main supply line to be delivered to the spraying member. On the rack a washing apparatus is provided, with one end connected to the delivery line, which enables the water received from the delivery line to be delivered into a hollow item so as to wash said item. The washing apparatus has one or more than hole. Thus, the water delivered to the washing apparatus is delivered into a hollow item on the rack by means of the holes. Consequently, regional washing is realized.

[0006] The dishwasher of the present invention comprises the washing apparatus having thereon a valve which controls the flow rate of the water received from the delivery line and delivered to the item by means of the holes. The dirtiness rates of the items placed onto the rack may be different.

Therefore, some items may require relatively heavy washing. In case the user places an item with heavy dirt onto the rack, the flow rate of the water to be delivered onto the item must be high in order to perform an efficient washing process. By rotating the valve clockwise or counterclockwise, the flow rate of the water delivered from the delivery line to the washing apparatus is controlled. Thus, while a larger amount of water is delivered to an item with relatively heavier dirt placed onto the rack, a smaller amount of water is delivered to an item with relatively less dirt. The valve can be closed as per user preference, and thus the water delivery from the delivery line to the washing apparatus is prevented.

[0007] In an embodiment of the present invention, the washing apparatus comprises a channel with one end connected to the delivery line and the other end positioned on the washing apparatus, which enables the user to load detergent. If the user selects a heavy wash program in case an item with heavy dirt is placed onto the rack, the amount of water and detergent

consumed increases. By enabling the user to load detergent into the washing apparatus, the washing apparatus becomes independent of the detergent dispenser. Thus, the amount of water and detergent consumed is prevented from increasing. The water received from the delivery line and the detergent loaded by the user are delivered to the holes arranged on the washing apparatus. The detergent-water mixture is delivered to the items on the rack, and thus the washing process is carried out.

[0008] In another embodiment of the present invention, the washing apparatus comprises a clip which is disposed between the channel and the delivery line and which interrupts the connection between the washing apparatus and the delivery line in case no water is delivered to the washing apparatus from the delivery line. The water received from the delivery line passes through the channel to be delivered to the washing apparatus and the holes on the washing apparatus. In case the washing apparatus is not required to be used as per user preference, the connection is interrupted by means of the clip between the channel and the delivery line, preventing the delivery of water from the delivery line to the channel.

[0009] In another embodiment of the present invention, the washing apparatus comprises at least one fixing member having one or more than one flexible claw which enables the washing apparatus to be detachably placed onto the wires of the rack. The washing apparatus can be placed onto the rack by means of various connection methods such as screw connection, snap-fit connection, etc. However, by means of the flexible claws, the washing apparatus is more easily placed onto the rack. Moreover, by means of the claws a plurality of washing apparatuses can be placed onto the rack as per user preference. Since the washing apparatus can be detached when not needed, the washing area on the rack can be efficiently used.

[0010] In another embodiment of the present invention, the dishwasher comprises at least one housing which is arranged on the rack and with which the claw engages so as to enable the washing apparatus to be fixed onto the wire. The flexible claw provided on the washing apparatus engages with the housings positioned on the wire so as to align with the flexible claw. Thus,

the washing apparatus is disposed onto the rack.

- [0011] In an embodiment of the present invention, the washing apparatus comprises a locking member which is provided at the end of the washing apparatus and which enables the washing apparatus to be locked in position. By means of the locking member, the washing apparatus, which is fixed by engaging the flexible claws with the housings on the wire, is prevented from moving during the washing process.
- [0012] By means of the present invention, a dishwasher is realized, comprising the washing apparatus having the valve which controls the flow rate of the water received from the delivery line and delivered to the holes thereon.
- [0013] The dishwasher realized in order to attain the aim of the present invention is illustrated in the attached figures, where:
- [0014] Figure 1 - is the general perspective view of the dishwasher.
- [0015] Figure 2 - is the top perspective view of the delivery line and the washing apparatus which is placed onto the rack in an embodiment of the present invention.
- [0016] Figure 3 - is the perspective view of the washing apparatus.
- [0017] Figure 4 - is the top perspective view of the delivery line and the clip.
- [0018] Figure 5 - is the top perspective view of the washing apparatus which is placed onto the rack in an embodiment of the present invention.
- [0019] The elements illustrated in the figures are numbered as follows:
1. Dishwasher
 2. Body
 3. Washing tub
 4. Main supply line
 5. Rack
 6. Spraying member
 7. Transmission line
 8. Washing apparatus
 9. Hole
 10. Valve
 11. Channel
 12. Clip

- 13. Fixing member
- 14. Claw
- 15. Housing
- 16. Locking member

[0020] The dishwasher (1) comprises a body (2); a washing tub (3) which is arranged in the body (2) and wherein the washing process is realized; a main supply line (4) for delivering water into the washing tub (3); at least one rack (5) which is arranged in the washing tub (3) and which has a plurality of wires (T) whereon the dishes to be washed are placed; at least one spraying member (6) which enables the water received from the main supply line (4) to be delivered onto the items on the rack (5) so as to carry out regional washing; a delivery line (7) with one end connected to the main supply line (4), which delivers water to the spraying member (6); and a washing apparatus (8) with one end connected to the delivery line (7), which is placed onto the rack (5) and which enables the water received from the delivery line (7) to be delivered into a hollow item on the rack (5) by means of one or more than one hole (9) so as to wash said item. The water received from the main supply line (4) is delivered to both the spraying member (6) and the washing apparatus (8) by means of the delivery line (7). The water delivered to the washing apparatus (8) is delivered into a hollow item on the rack (5) by means of the holes (9) thereon. A plurality of washing apparatuses (8) can be placed onto the rack (5) (Figure 1, Figure 2).

[0021] The dishwasher (1) of the present invention comprises the washing apparatus (8) having thereon a valve (10) which controls the flow rate of the water received from the delivery line (7) and delivered to the holes (9) on the washing apparatus (8). In order to carry out an efficient washing process, different amounts of detergent and water must be delivered to items with different dirtiness rates. For example, the amount of detergent and water required for washing an item with heavier dirt is more than what is required for an item with less dirt. Depending on the dirtiness rate of the item placed onto the rack (5) by the user, the amount of water delivered to the holes (9) is increased or

decreased by rotating the valve (10) clockwise or counterclockwise. The valve (10) can be closed as per user preference, and thus the water delivery from the delivery line (7) to the washing apparatus (8) is prevented (Figure 3).

[0022] In an embodiment of the present invention, the washing apparatus (8) comprises a channel (11) with one end connected to the delivery line (7) and the other end positioned on the washing apparatus (8), which enables the user to load detergent. In case a hollow item is placed onto the rack (5), detergent must be delivered to the washing apparatus (8) together with water in order to carry out an efficient washing process. The user may select a heavy wash program in order to remove heavy dirt from the item. Therefore, the amount of detergent consumed for the washing process increases. The user can load detergent via the channel (11). Thus, the washing apparatus (8) becomes independent of the detergent dispenser, preventing the amount of detergent consumed from increasing. The detergent and the water received from the delivery line (7) are delivered to the holes (9) arranged on the washing apparatus (8). The detergent-water mixture is delivered to the items on the rack (5), and thus the washing process is carried out (Figure 3).

[0023] In another embodiment of the present invention, the washing apparatus (8) comprises a clip (12) which is disposed between the channel (11) and the delivery line (7) and which interrupts the connection between the washing apparatus (8) and the delivery line (7) in case no water is delivered to the washing apparatus (8) from the delivery line (7). The water received from the delivery line (7) passes through the channel (11) to be delivered to the washing apparatus (8) and the holes (9) on the washing apparatus (8). In case the washing apparatus (8) is not required to be used as per user preference, the connection between the channel (11) and the delivery line (7) is interrupted, preventing the delivery of water from the delivery line (7) (Figure 4).

[0024] In another embodiment of the present invention, the washing apparatus (8) comprises at least one fixing member (13) having one or more than one flexible claw (14) which enables the washing apparatus (8) to be

detachably placed onto the wires (T) of the rack (5). The washing apparatus (8) can be placed onto the rack (5) by means of various connection methods such as screw connection, snap-fit connection, etc. In the preferred embodiment of the present invention, the washing apparatus (8) is placed onto the rack (5) by means of one or more than one flexible claw (14). Thus, the washing apparatus (8) is more easily placed onto the rack (5). Since the washing apparatus (8) can be detached when not needed, the washing area on the rack (5) can be efficiently used (Figure 3).

[0025] In another embodiment of the present invention, the dishwasher (1) comprises at least one housing (15) which is arranged on the rack (5) and with which the claw (14) engages so as to enable the washing apparatus (8) to be fixed onto the wire (T). Thus, the flexible claws (14) are enabled to engage with the housings (15) provided on the wire (T) and positioned correspondingly, thus providing the placement of the washing apparatus (8) onto the rack (5).

[0026] In another embodiment of the present invention, the washing apparatus (8) comprises a locking member (16) which is provided at the end of the washing apparatus (8) and which enables the washing apparatus (8) to be locked in position. The washing apparatus (8), which is placed onto the rack (5) by engaging the flexible claws (14) with the housings (15), is prevented from moving during the washing process.

[0027] By means of the present invention, a dishwasher (1) is realized, comprising a washing apparatus (8) which allows the loading of detergent via a channel (11). Thus, the washing apparatus (8) becomes independent of the detergent dispenser, preventing the amount of detergent consumed from increasing.

Claims

1. A dishwasher (1) **comprising** a body (2); a washing tub (3) which is arranged in the body (2) and wherein the washing process is realized; a main supply line (4) for delivering water into the washing tub (3); at least one rack (5) which is arranged in the washing tub (3) and which has a plurality of wires (T) whereon the dishes to be washed are placed; at least one spraying member (6) which enables the water received from the main supply line (4) to be delivered onto the items on the rack (5) so as to carry out regional washing; a delivery line (7) with one end connected to the main supply line (4), which delivers water to the spraying member (6); and a washing apparatus (8) with one end connected to the delivery line (7), which is placed onto the rack (5) and which enables the water received from the delivery line (7) to be delivered into a hollow item on the rack (5) by means of one or more than one hole (9) so as to wash said item, **characterized by** the washing apparatus (8) having thereon a valve (10) which controls the flow rate of the water received from the delivery line (7) and delivered to the holes (9) on the washing apparatus (8).
2. A dishwasher (1) as in Claim 1, **characterized by** the washing apparatus (8) comprising a channel (11) with one end connected to the delivery line (7) and the other end positioned on the washing apparatus (8), which enables the user to load detergent.
3. A dishwasher (1) as in Claim 2, **characterized by** a clip (12) which is disposed between the channel (11) and the delivery line (7) and which interrupts the connection between the washing apparatus (8) and the delivery line (7) in case no water is delivered to the washing apparatus (8) from the delivery line (7).
4. A dishwasher as in any one of the above claims, **characterized by** the washing apparatus (8) comprising at least one fixing member (13) having one or more than one flexible claw (14) which enables the washing apparatus (8) to be detachably placed onto the wires (T) of the rack (5).
5. A dishwasher (1) as in Claim 4, **characterized by** at least one housing (15) which is arranged on the rack (5) and with which the claw (14) engages so as to enable the washing apparatus (8) to be fixed onto the wire (T).
6. A dishwasher (1) as in any one of the above claims, **characterized by** a locking member (16) which is provided at the end of the washing apparatus (8) and

which enables the washing apparatus (8) to be locked in position.

Figure 1

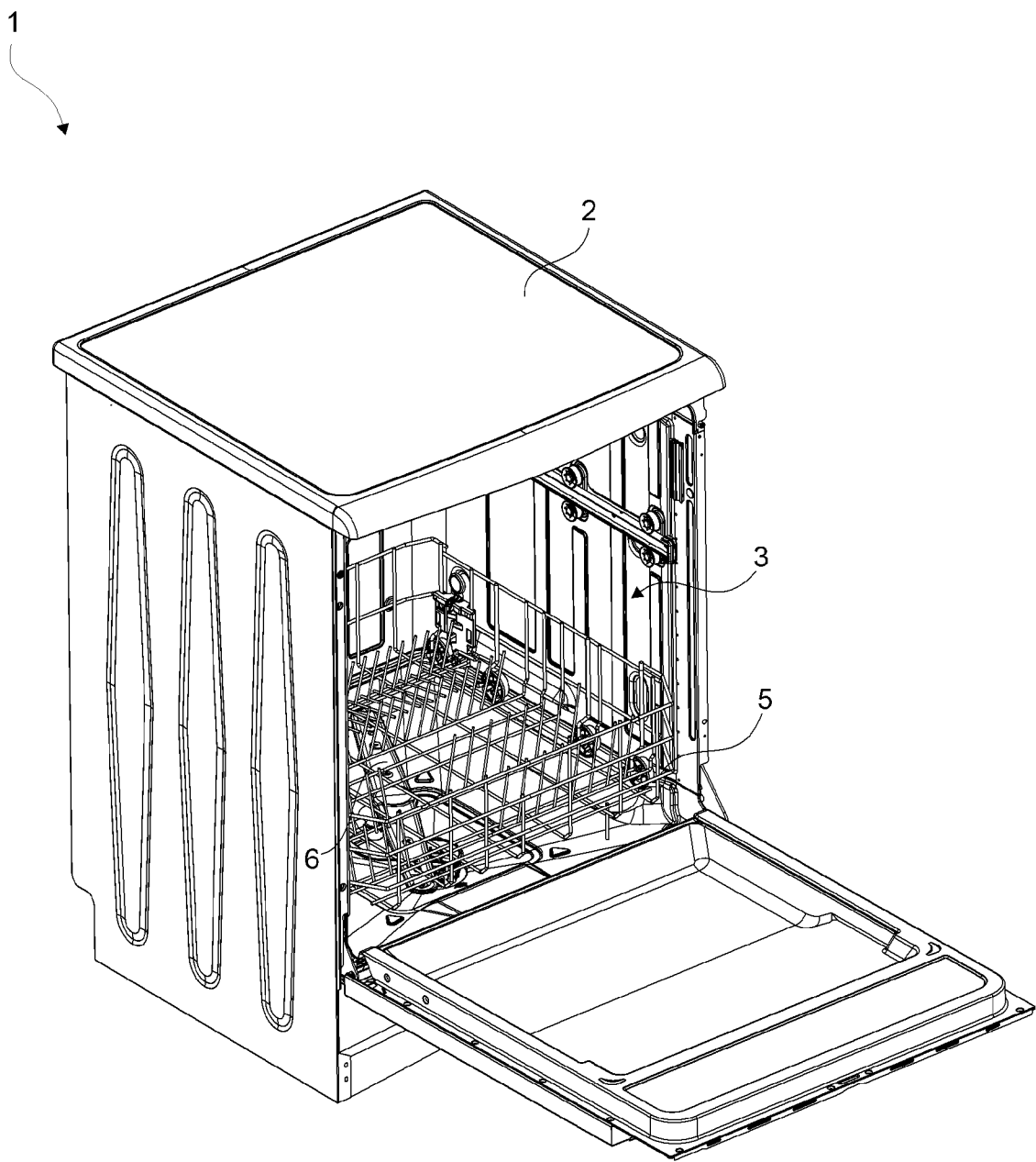


Figure 2

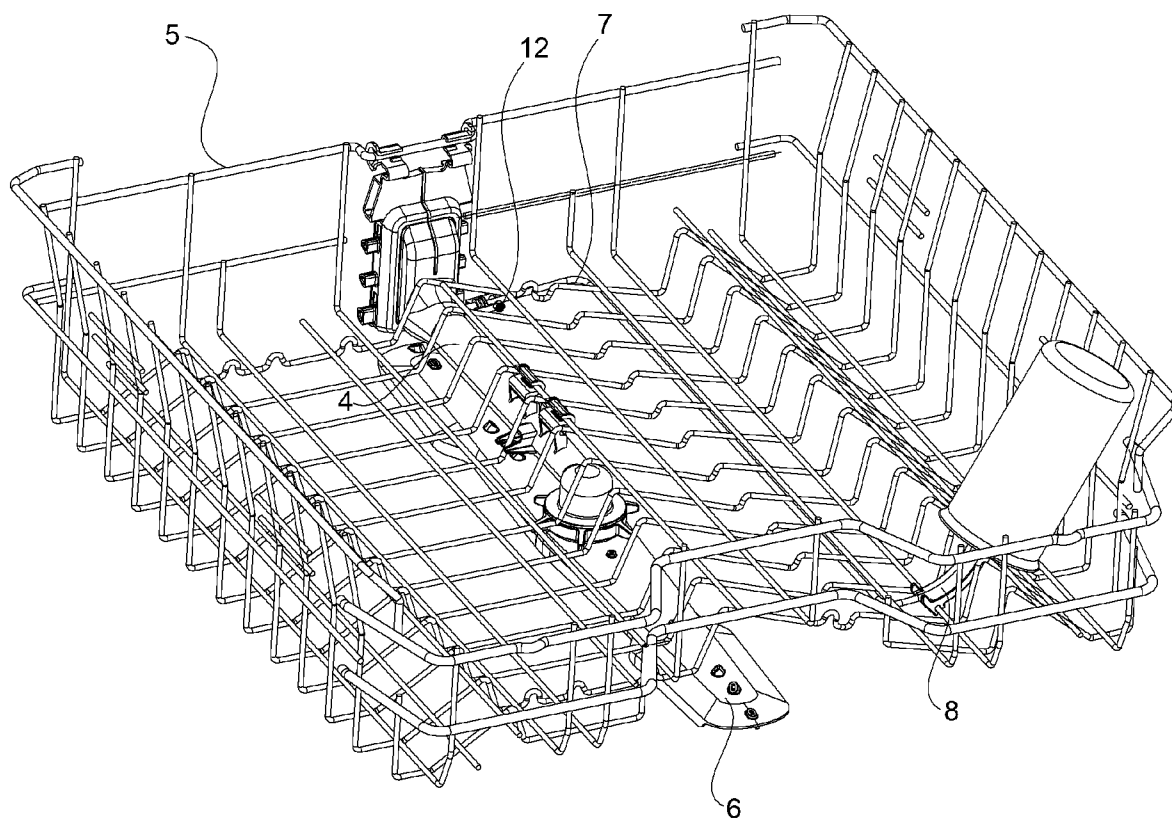


Figure 3

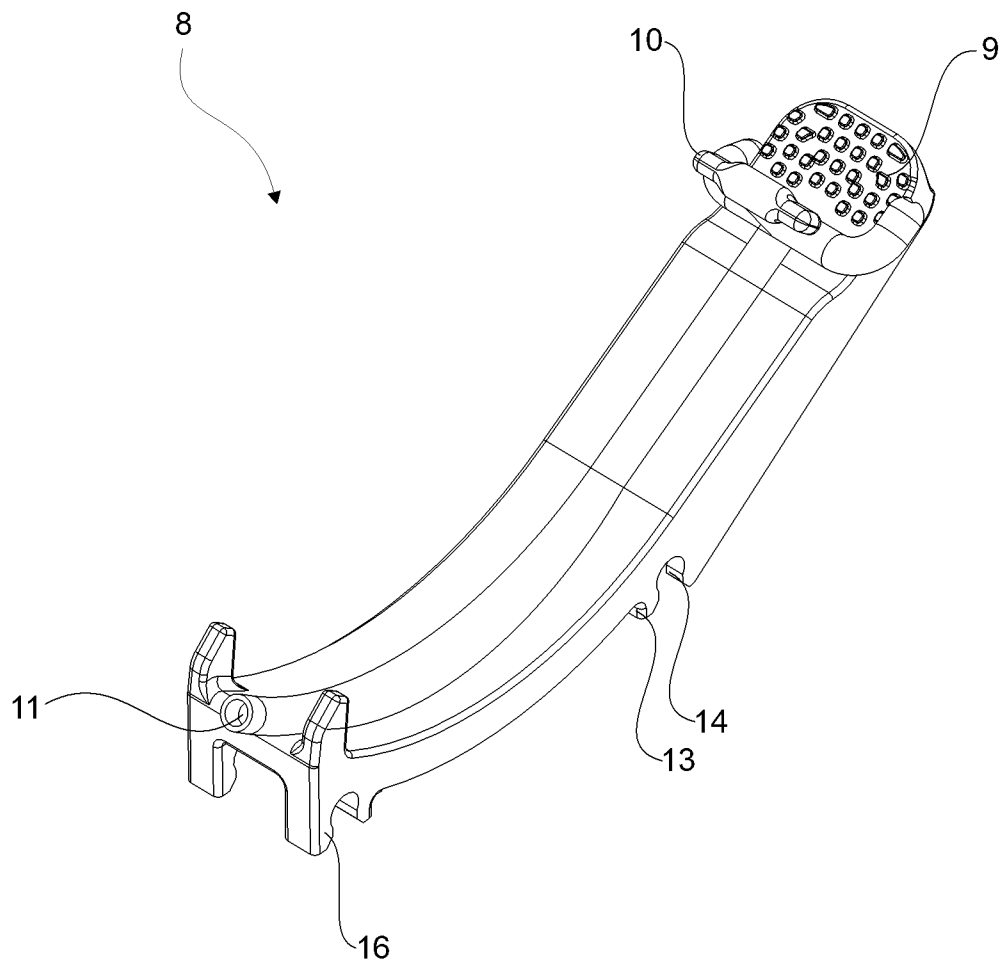


Figure 4

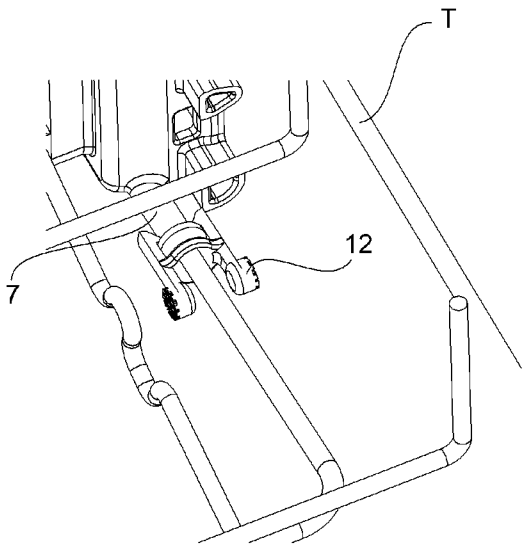
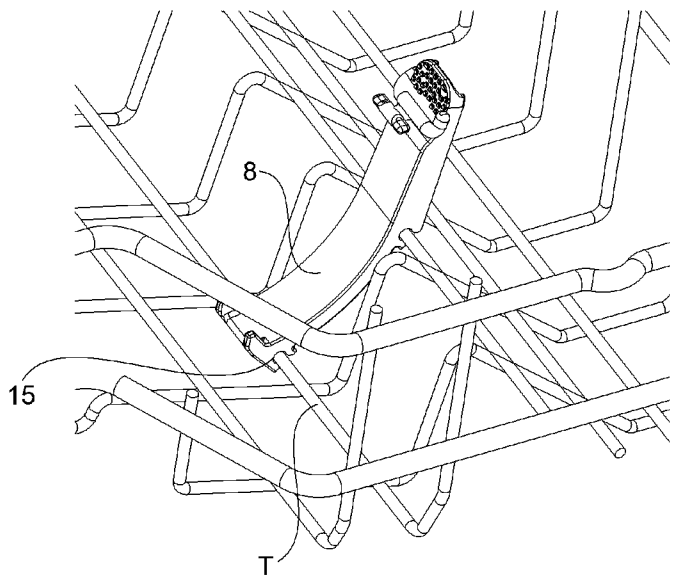


Figure 5



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2005/065519 A1 (MIELE & CIE [DE]; KOCH STEPHAN [DE]; WEGENER DIRK [DE]) 21 July 2005 (2005-07-21)	1,4-6
A	page 5, line 4 - page 6, line 11; figures 4-8	2,3
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A	page 3, paragraph [0029] - page 4, paragraph [0041]; figures 3, 4	2,3
X	US 2017/188790 A1 (BOYER JOEL CHARLES [US]) 6 July 2017 (2017-07-06) the whole document	1,4-6
A	WO 2017/080583 A1 (ARCELIK AS [TR]) 18 May 2017 (2017-05-18) the whole document	1-6
	-/-	



Further documents are listed in the continuation of Box C.



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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2019/083567

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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